

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing: of Claims:

1. (currently amended) A computer-implemented method of inserting a plurality of new entries into an existing index keyed by multidimensional data, comprising:

~~selecting nodes of the index each of the selected nodes of the index having~~
~~entries, wherein the selection of the nodes of the index is based on that the selected nodes~~
~~of the index overlap when the plurality of entries are inserted into a first one of the~~
~~selected nodes of the index, wherein the selected nodes of the index are sibling nodes;~~

selecting ~~[[the]]~~ a first node ~~one of nodes~~ of the index having a plurality of entries
stored in a database to insert the plurality of entries within the first one of the selected
nodes of the index;

inserting the plurality of new entries within the first node ~~one of the selected~~
~~nodes of the index;~~

~~partitioning the entries of the first one of the selected nodes into groups to reduce~~
~~overlap, wherein each group of entries corresponds to a partitioned node of the index; and~~

aggregating the entries of the first node of the index to produce a cluster of nodes
having a first child node of the first node and a second child node of the first node;

determining that a second node including the plurality of new entries would
overlap the first child node of the first node and the second child node of the first node;

determining that the first child node of the first node is a leaf node;

~~reorganizing the entries of first node to reduce overlap between the plurality of entries of the first node and the plurality of new entries to replace the first child node of the first node and a second child node of the first node with new child nodes having the plurality of entries of the first node and the plurality of new entries a second one of the selected nodes of the index and the partitioned nodes, wherein said reorganizing includes reorganizing the entries in each of the second one of the selected nodes and the partitioned nodes to reduce overlap.~~

2. (cancelled)

3. (previously presented) The method according to claim 1, wherein:
the entries include spatial data; and the index keyed by multidimensional data includes a spatial index.

4. (previously presented) The method according to claim 1, wherein the sibling nodes are for a R-Tree index.

5. (cancelled)

6. (cancelled)

7. (currently amended) The method according to claim 3 [[6]], wherein said reorganizing includes reorganizing to reduce overlap of bounding boxes for objects in the spatial index.

8. (previously presented) The method according to claim 7, wherein one of the bounding boxes includes a minimum bounding rectangle (MBR).

9. (cancelled)

10. (cancelled).

11. (cancelled)

12. (cancelled)

13. (cancelled)

14. (currently amended) A computer-implemented method of inserting a plurality of entries into an existing multidimensional-keyed index organized as an R-Tree, comprising:

associating a node in the R-tree with a buddy node that is a sibling of the node;

clustering children of the node and the children of the buddy node, each of the children having entries;

partitioning the clustered entries of the node and the buddy node into a plurality of groups, wherein each entry of the node and buddy node corresponds to a child node, and wherein at least one of the plurality of groups includes a child node of the node and the buddy node, a buddy child node associated the child node, and one or more of the plurality of entries, said partition is performed to reduce overlap among bounding boxes associated with the plurality of groups;

inserting said one or more of the plurality of entries among the child node and the buddy child node associated the child node;

determining that the plurality of entries would overlap the entries of the child node and buddy child node

determining that the child node is a leaf node; and

reorganizing the child node and the buddy child node associated the child node, wherein the reorganizing includes reorganizing the distribution of the entries in each of the child node and the buddy child node associated the child node to replace the child node and the buddy node with new nodes having the plurality of entries of the first node and the plurality of new entries.

15. (previously presented) The method according to claim 14, wherein:
each node of the R-tree is associated with a respective bounding box; and
a first bounding box associated with the child node overlaps a second bounding box associated with the buddy child node.

16. (cancelled)

17. (cancelled)

18. (currently amended) A computer-readable storage medium storing instructions for inserting a plurality of new entries into an existing index keyed by multidimensional data, said instructions arranged, upon execution by at least one processor, to perform the steps of:

~~selecting nodes of the index each of the selected nodes of the index having~~
~~entries, wherein the selection of the nodes of the index is based on that the selected nodes~~
~~of the index overlap when the plurality of entries are inserted into a first one of the~~
~~selected nodes of the index, wherein the selected nodes of the index are sibling nodes;~~

selecting ~~[[the]]~~ a first node ~~one of nodes~~ of the index having a plurality of entries
stored in a database to insert the plurality of entries within the first one of the selected
nodes of the index;

inserting the plurality of new entries within the first node ~~one of the selected~~
~~nodes of the index;~~

~~partitioning the entries of the first one of the selected nodes into groups to reduce~~
~~overlap, wherein each group of entries corresponds to a partitioned node of the index; and~~

aggregating the entries of the first node of the index to produce a cluster of nodes
having a first child node of the first node and a second child node of the first node;

determining that a second node including the plurality of new entries would
overlap the first child node of the first node and the second child node of the first node;

determining that the first child node of the first node is a leaf node;

reorganizing the entries of first node to reduce overlap between the plurality of entries of the first node and the plurality of new entries to replace the first child node of the first node and a second child node of the first node with new child nodes having the plurality of entries of the first node and the plurality of new entries ~~a second one of the selected nodes of the index and the partitioned nodes, wherein said reorganizing includes reorganizing the entries in each of the second one of the selected nodes and the partitioned nodes to reduce overlap.~~

19. (cancelled)

20. (currently amended) A computer-readable storage medium bearing instructions for inserting a plurality of entries into existing multidimensional-keyed index organized as an R-Tree, said instructions arranged, upon execution by at least one processor, to perform the steps of:

associating a node in the R-tree with a buddy node that is a sibling of the node;

clustering selected children of the node and the children of the buddy node, each of the selected children having entries;

partitioning the clustered entries of the node and the buddy node into a plurality of groups, wherein each entry of the node and buddy node corresponds to a child node, and wherein at least one of the groups includes a child node of the node and the buddy node, a buddy child node associated the child node, and one or more of the plurality of entries, said partition is performed to reduce overlap among bounding boxes associated with the plurality of groups;

inserting said one or more of the plurality of entries among the child node and the buddy child node associated the child node;

determining that the plurality of entries would overlap the entries of the child node and buddy child node

determining that the child node is a leaf node; and

reorganizing the child node and the buddy child node associated the child node, wherein the reorganizing includes reorganizing the distribution of the entries in each of the child node and the buddy child node associated the child node to replace the child node and the buddy node with new nodes having the plurality of entries of the first node and the plurality of new entries.